



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

D212-664-201
Job Sheet 198971



Part No: D212-664-201

Job Qty: 1 pcs

Part Name: Aft Crosstube - High



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 8/8/19

Job Tracking No:

Due Date: 8/29/19

Created By: Marie Lajeunesse

Type: Stock

Description:

Note: IIN-D212-664 REV.J/ D212-664-241 REV E IPP Rev:E 04.02.16 Reformat K/DS IPP Rev:F 06-03-29 Remove
Comments on Pick List JLM IPP Rev:G 07-04-30 As per Rev C JLM IPP Rev:H 08-05-22 up date Qty of rubber
cushion DD ver:EC IPP REV:I 14.05.27 AS PER ECN14-570 DD VERF:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard Setup Hrs	Run Hrs	Workcenter/Supplier	Sign-off
120	Crosstubes - Bend - 1	1 pcs	8/29/19	8/29/19	0.00	1.00	Crosstubes - Bend	BS 8/10/2019
130	QC 15	1 pcs	8/29/19	8/29/19	0.00	0.00	QC 15 - 12	
							QC 15 - 3	
							QC 15 - 47	
							QC 15 - 49	
							QC 15 - 58	
							QC 15 - 9	
							QC 15 - 68	DAS AUG 14 2019 68 9-89
140	Crosstubes - 2 - B4B	1 pcs	8/29/19	8/29/19	0.00	2.00	Crosstubes - 1 - B4B	
							Crosstubes - 2 - B4B	
							Crosstubes - 3 - B4B	BS 8/14/2019
							Crosstubes - 4 - B4B	
150	Crosstubes - 3 - B4B	1 pcs	8/29/19	8/29/19	0.00	1.00	Crosstubes - 1 - B4B	
							Crosstubes - 2 - B4B	
							Crosstubes - 3 - B4B	BS 8/14/2019
							Crosstubes - 4 - B4B	
160	QC 7	1 pcs	8/29/19	8/29/19	0.00	0.00	QC 7 - 10	
							QC 7 - 13	
							QC 7 - 14	
							QC 7 - 15	
							QC 7 - 17	
							QC 7 - 18	
							QC 7 - 19	
							QC 7 - 2	
							QC 7 - 28	
							QC 7 - 3	
							QC 7 - 30	
							QC 7 - 34	
							QC 7 - 36	
							QC 7 - 37	

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				QC 7 - 41	
				QC 7 - 47	
				QC 7 - 48	
				QC 7 - 51	
				QC 7 - 58	
				QC 7 - 59	
				QC 7 - 60	
				QC 7 - 9	DAS
				QC 7 - 68	AUG 26 2019 68
				QC 7 - 50	9-89
				QC 7 - 67	
				QC 7 - 40	
				QC 7 - 24	
				QC 7 - 43	
				QC 7 - 61	
				QC 7 - 81	
170 QC 5	1 pcs	8/29/19	0.00 0.00	QC 5 - 10	
				QC 5 - 12	
				QC 5 - 17	
				QC 5 - 18	
				QC 5 - 19	
				QC 5 - 22	
				QC 5 - 24	
				QC 5 - 3	
				QC 5 - 43	
				QC 5 - 49	
				QC 5 - 51	
				QC 5 - 58	DAS
				QC 5 - 68	AUG 26 2019 68
				QC 5 - 9	9-89
				QC 5 - 50	
				QC 5 - 30	
				QC 5 - 40	
				QC 5 - 61	
				QC 5 - 81	
180 Outsource - 2 - NDT per QSI038	1 pcs	8/29/19		SKY002-VC	5
				2019-08-28	
190 Packaging 2-1 - Receive - B4B	1 pcs	8/29/19	0.00 0.00	Packaging 2 - 1 - B4B	
				Packaging 2 - 2 - B4B	
				Packaging 2 - 3 - B4B	
				Packaging 2 - 5 - B4B	
				Packaging 2 - 4 - B4B	
				Packaging 2 - 6 - B4B	
				Packaging 2 - 7 - B4B	
				Packaging 2 - 8 - B4B	
				Packaging 2 - 9 - B4B	
				Packaging 2 - 10 - B4B	
				Packaging 2 - 11 - B4B	
				Packaging 2 - 12 - B4B	
				Packaging 2 - 13 - B4B	
				Packaging 2 - 14 - B4B	
				Packaging 2 - 15 - B4B	
				Packaging 2 - 16 - B4B	
				Packaging 2 - 17 - B4B	
				Packaging 2 - 18 - B4B	
				Packaging 2 - 19 - B4B	
				Packaging 2 - 20 - B4B	
				Packaging 2 - 21 - B4B	
				Packaging 2 - 22 - B4B	

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					Packaging 2 - 23 - B4B	
					Packaging 2 - 24 - B4B	
					Packaging 2 - 25 - B4B	
					Packaging 2 - 26 - B4B	
					Packaging 2 - 27 - B4B	
					Packaging 2 - 28 - B4B	
					Packaging 2 - 29 - B4B	
					Packaging 2 - 30 - B4B	
					Packaging 2 - 31 - B4B	
					Packaging 2 - 32 - B4B	
					Packaging 2 - 33 - B4B	
					Packaging 2 - 34 - B4B	
					Packaging 2 - 35 - B4B	
					Packaging 2 - 36 - B4B	
200	QC 5	1 pcs	8/29/19	0.00 0.00	QC 5 - 10	
					QC 5 - 12	
					QC 5 - 17	
					QC 5 - 18	
					QC 5 - 19	
					QC 5 - 22	
					QC 5 - 24	
					QC 5 - 3	
					QC 5 - 43	
					QC 5 - 49	
					QC 5 - 51	
					QC 5 - 58	
					QC 5 - 68	AUG 30 2019 ^{DAS} 68
					QC 5 - 9	9-89
					QC 5 - 50	
					QC 5 - 30	
					QC 5 - 40	
					QC 5 - 61	
					QC 5 - 81	
210	Spray Paint - 2 - B4B	1 pcs	8/29/19	0.00 1.47	Spray Paint - 1 - B4B	
					Spray Paint - 2 - B4B	- RD 19-8-31
					Spray Paint - 3 - B4B	
					Spray Paint - 4 - B4B	
220	QC 14	1 pcs	8/29/19	0.00 0.00	QC 14 - 15	
					QC 14 - 2	
					QC 14 - 34	
					QC 14 - 41	Ag 19-9-7
					QC 14 - 51	
					QC 14 - 58	
					QC 14 - 59	
					QC 14 - 9	
					QC 14 - 68	
					QC 14 - 40	
					QC 14 - 19	
					QC 14 - 43	
					QC 14 - 24	
					QC 14 - 61	
					QC 14 - 81	
230	Crosstubes - 4 - B4B	1 pcs	8/29/19	0.00 1.47	Crosstubes - 1 - B4B	
					Crosstubes - 2 - B4B	
					Crosstubes - 3 - B4B	
					Crosstubes - 4 - B4B	Ag 19-7-8
240	QC 5	1 pcs	8/29/19	0.00 0.00	QC 5 - 10	
					QC 5 - 12	
					QC 5 - 17	

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					QC 5 - 18	
					QC 5 - 19	
					QC 5 - 22	
					QC 5 - 24	
					QC 5 - 3	
					QC 5 - 43	
					QC 5 - 49	
					QC 5 - 51	
					QC 5 - 58	
					QC 5 - 68	DAS SEP 11 2019 68
					QC 5 - 9	9-89
					QC 5 - 50	
					QC 5 - 30	
					QC 5 - 40	
					QC 5 - 61	
					QC 5 - 81	
250	Packaging 1-2 - Pick Kit - B4B	1 pcs	8/29/19	0.00 0.00	Packaging 1 - 1 - B4B	
					Packaging 1 - 2 - B4B	✓
					Packaging 1 - 3 - B4B	
					Packaging 1 - 4 - B4B	
					Packaging 1 - 5 - B4B	
					Packaging 1 - 6 - B4B	
					Packaging 1 - 7 - B4B	
					Packaging 1 - 8 - B4B	
					Packaging 1 - 9 - B4B	
					Packaging 1 - 10 - B4B	
					Packaging 1 - 11 - B4B	
					Packaging 1 - 12 - B4B	
					Packaging 1 - 13 - B4B	
					Packaging 1 - 14 - B4B	
					Packaging 1 - 15 - B4B	
					Packaging 1 - 16 - B4B	
					Packaging 1 - 17 - B4B	
					Packaging 1 - 18 - B4B	
					Packaging 1 - 19 - B4B	
					Packaging 1 - 20 - B4B	
					Packaging 1 - 21 - B4B	
					Packaging 1 - 22 - B4B	
					Packaging 1 - 23 - B4B	
					Packaging 1 - 24 - B4B	
					Packaging 1 - 25 - B4B	
					Packaging 1 - 26 - B4B	
					Packaging 1 - 27 - B4B	
					Packaging 1 - 28 - B4B	
					Packaging 1 - 29 - B4B	
					Packaging 1 - 30 - B4B	
					Packaging 1 - 31 - B4B	
					Packaging 1 - 32 - B4B	
					Packaging 1 - 33 - B4B	
					Packaging 1 - 34 - B4B	
					Packaging 1 - 35 - B4B	
					Packaging 1 - 36 - B4B	
260	QC 4	1 pcs	8/29/19	0.00 0.00	QC 4 - 28	
					QC 4 - 58	
					QC 4 - 69	
					QC 4 - 9	
					QC 4 - 46	
					QC 4 - 68	
					QC 4 - 72	

THU 9-12-2019
Rosales, Oscar

Nov 13.

9/12/2019

				QC 4 - 74	
				QC 4 - 75	
270	Packaging 3-1 - Stock - B4B	1 pcs	8/29/19	0.00 0.00	Packaging 3 - 1 - B4B
					Packaging 3 - 2 - B4B
					Packaging 3 - 3 - B4B
					Packaging 3 - 4 - B4B
					Packaging 3 - 5 - B4B
					Packaging 3 - 6 - B4B
					Packaging 3 - 7 - B4B
					Packaging 3 - 8 - B4B
					Packaging 3 - 9 - B4B
					Packaging 3 - 10 - B4B
					Packaging 3 - 11 - B4B
					Packaging 3 - 12 - B4B
					Packaging 3 - 13 - B4B
					Packaging 3 - 14 - B4B
					Packaging 3 - 15 - B4B
					Packaging 3 - 16 - B4B
					Packaging 3 - 17 - B4B
					Packaging 3 - 18 - B4B
					Packaging 3 - 19 - B4B
					Packaging 3 - 20 - B4B
					Packaging 3 - 21 - B4B
					Packaging 3 - 22 - B4B
					Packaging 3 - 23 - B4B
					Packaging 3 - 24 - B4B
					Packaging 3 - 25 - B4B
					Packaging 3 - 26 - B4B
					Packaging 3 - 27 - B4B
					Packaging 3 - 28 - B4B
					Packaging 3 - 29 - B4B
					Packaging 3 - 30 - B4B
					Packaging 3 - 31 - B4B
					Packaging 3 - 32 - B4B
					Packaging 3 - 33 - B4B
					Packaging 3 - 34 - B4B
					Packaging 3 - 35 - B4B
					Packaging 3 - 36 - B4B
275	DC - 1 - B4B	1 pcs	8/29/19	0.00 0.00	DC - 1 - B4B
					DC - 2 - B4B
280	QC 21 - FG	1 pcs	8/29/19	0.00 0.00	QC 21 - FG - 21
					QC 21 - FG - 70
					QC 21 - SA - 53

NL

DAS 21 SEP 13 2019
9-89
DAS 21 SEP 13 2019
9-89

Part Op 120 - NC Bend Crosstube (CNC Alpha 160 Bender)*VERF SET-UP BEFORE BENDING BY:***

Descriptions: Bend tube as per Dwg D212-664-241 using CNC bender program 212-af

130 - QC15- Crosstube Dimensional Check)

140 - 1-Drill pilot holes in tube as per Dwg D212-664-241 using drill Jig DT8550, DT8551, drill table DT8577 and locate tower holes #8 as per QSI0010. 2-Ream hole to finish size in tube as per Dwg D212-664-241 using drill Jig DT8550 & DT8551. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes. 3-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-241 4- ***WEAR LATEX GLOVES HANDLING CROSSTUBE.*** Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-241

150 - HandFinish5 (Crosstubes Chemical Conversion) ***IMMEDIATELY AFTER GRINDING***

160 - QC7-1 (QC7-Inspect Chemical Conversion Coat)

170 - (QC5- Inspect part completeness to step on W/O)

180 - ***WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE.*** Issue P/O: _____ LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2

190 - (Receive & Inspect for Damage & Mat'l Certs) ***WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE.***

200 - QC5- Inspect part completeness to step on W/O) ***WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE.*** Inspect for damage & ensure results are as per Dwg D212-664-241

210 - Spray Paint (Spray Paint / NDT Room) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Primer

220 - (QC14- Inspect Spray Paint) Then, Wrap in plastic bag to protect from scratches clear 5184743 Paint

230 - (Crosstube) *****LAY DOWN CROSSTUBE ON TABLE AND PUT DT10302 PINS IN SADDLE HOLE FACING UP,

5189223
5204429

USE HOLE IN TAPE MESURE TO PUT IN PINS FOR LOCATING CENTER OF CROSSTUBE. ***** 1- Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg 2- Install supports with Proseal 890 per D212-664-241 and QSI 015 A/R Proseal 890 Batch: 5176610
 EXP: 10/19 PROSEAL CURE TIME 72 HOURS: Start: 19-9-9
 Finish: 19-9-12 3- Install clamps with rubber cushion (ENSURE CLAMPS ARE INSTALL ON TOP SIDE OF CROSSTUBE) using DT9565 as per Dwg D212-664-241. ***Torque all clamps to 80-100 IN-LBS.***
 240 - QC5 (QC5- Inspect part completeness to step on W/O) ***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED FOR 72HOURS AS PER DWG.***
 250 - Packaging1-3 (Pick Kit)
 260 - QC4 (QC4- 100% Inspect kits for completeness ***VERIFY BY _____ BATCH # TO MATCH W/O

270 - Packaging3-1 (Identify as per dwg & Stock Location: _____) Identify and pack for shipping as per PPP D212-664-201 Location : FG098
 275 - (Document Control) Photocopy bluefile and create labels as per PPP D212-664-201 CHG006
 280 - (QC21- Final Inspection - Work Order Release)

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D212-664-201TRN	Crosstube Turning Detail	1 pcs (1 ea)	120-Crosstubes - Bend - 1	S 201666
D2940-1	Support	2 pcs (2 ea)	230-Crosstubes - 4 - B4B	
D3595-063-530	Rubber Cushion 0.63" Wide X 5.30" Long	4 pcs (4 ea)	230-Crosstubes - 4 - B4B	
MS21920-28	Clamp	4 Ea (4 ea)	230-Crosstubes - 4 - B4B	
AN6-40A	3/8-24 Bolt X 3" Long	4 Ea (4 ea) ✓	250-Packaging 1-2 - Pick Kit - B4B - 3173179 ✓	
AN6-41A	Bolt	2 Ea (2 ea) ✓	250-Packaging 1-2 - Pick Kit - B4B - 5149318 ✓	
D3428-1	Placard	1 pcs (1 ea) ✓	250-Packaging 1-2 - Pick Kit - B4B - 5140317 ✓	
MS21042L6	Nut	6 Ea (6 ea) ✓	250-Packaging 1-2 - Pick Kit - B4B - 5147495 ✓	
NAS1149D0663J	Washer	18 Ea (18 ea) ✓	250-Packaging 1-2 - Pick Kit - B4B - 5167525 ✓	

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Thu 9-12-2019

Rosab, Oscar

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
120-Crosstubes - Bend - 1	D212-664-201TRN	1	8	0
230-Crosstubes - 4 - B4B	D2940-1	2	20	0
	D3595-063-530	4	27	0
	MS21920-28	4	114	0
250-Packaging 1-2 - Pick Kit - B4B	AN6-40A	4	61	0
	AN6-41A	2	35	0
	D3428-1	1	15	0
	MS21042L6	6	264	0
	NAS1149D0663J	18	630	0

Part Specifications

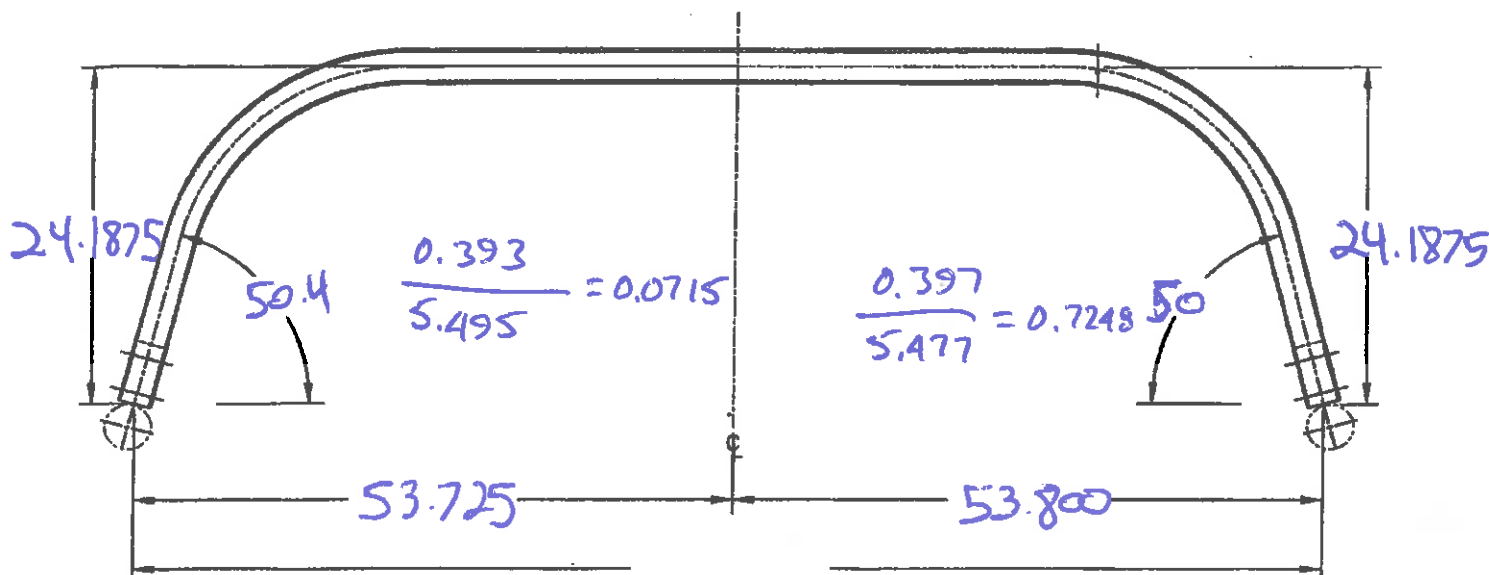
Specifications could not be found.

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198971

DART AEROSPACE LTD	Work Order:	197904
Description: Crosstube High Aft (205/212)	Part Number:	D212-664-201
Inspection Dwg: D212-664-241 Rev: E		Page 1 of 1

Required Dimension	Min	Max
Height	24.17	24.43
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.70
Bending Passes	5	—
Crushing	—	7.2%



2.551
2.944

	Side A	Side B
Bending Passes	19	19
Crushing	7.1%	7.2%
Comments		

2.540
2.937

QC15 Inspection	DAS
Date	AUG 14 2019 68 9-89

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.08	Dimensions updated per Dwg rev. C	KJ/JLM	
C	10.04.01	Dwg Rev updated	KJ	
D	12.04.16	Added bending, crushing dimensions	KJ	
E	14.07.08	Crushing percentage revised	KJ	

Item	Qty	Qty	Part Number	Description
1	-241	X	D212-864-241	CROSSTUBE ASSEMBLY (205/212 HIGH AFT)
2		X	D212-864-241B	CROSSTUBE ASSEMBLY (214 HIGH AFT)
3	1	1	D6008-129	CROSSTUBE
4	2	4	D2940-1	SUPPORT
5	4	4	D3595-063-530	RUBBER CUSHION
6	2	2	D5016-1	SUPPORT
7	4	4	MS21920-28	CLAMP (OR MS21920-30)
8	AR	AR	PROSEAL 890 B-2	SEALANT, AMS-S-8902 CLASS B-2

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6006-129
FINISHED LENGTH = 124.36250.020
- 2) FINISH: a) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
b) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
c) MASK INSIDE OF CROSSTUBE AS SHOWN (ZN C6-2 / C6-3, HATCHED AREA)
d) PAINT OUTSIDE PER DART QSI 005 4.2
e) REMOVE MASKING AND APPLY MATTIE CLEAR COAT
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER 'D212-864-XXX' AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: D212-864-241-241B = 44.2 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLEND OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 10) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- 11) BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 7.2% (BASED ON O.D.) IN LOWER HALF OF R35.5 BEND AND 6% (BASED ON O.D.) ON REMAINING TUBE.
- 12) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 13) ASSEMBLY
INSTALL D2940-1 / D5016-1 SUPPORT. ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8902 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
INSTALL MS21920-28 CLAMPS (OR -30) WITH D5016-063-530 RUBBER CUSHIONS TO SECURE THE SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE ON TOP SIDE OF CROSSTUBE.
TORQUE CLAMPS 80 TO 100 IN.-LB. ENSURE AT LEAST .15 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE

WORK ORDER

NO. 19897/1927-18
19897/1927-18

RELEASED
2014-05-26

E	D212-1 WAS D2940-1 (241B). PROSEAL WAS MAGNABOND. NOTE 2: ADD INSPECTION WINDOW. NOTE 11: ALLOW 7.2% GRIND. NOTE 16: ADD 72HR CURE AND RETORQUE FOR PROSEAL. ADD SHEET 3, CLAMPS REVERSED TO PREVENT CHAFING (ZN B7-2, B7-3). BEND HEIGHT TOL. NOW 0.25 WAS 0.19 (C1-4). INCORP DEC D-1P2	CP	14.04.01
D	REFORMAT/REVISE GENERAL NOTES/PART LIST: REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. ADD -241B (ZN D4-2, B4-2); REMOVED REF & ADD TOLERANCES (ZN D6-3 & C4-3, C6-3 & A6-3); RELOCATED FLAG #6 PER PAR 06-048 (ZN A6-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	06.09.30
C	REMOVE -1008 ABRASION STRIP. ADD MAGNABOND 9388. CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES	PH	06.02.04
A	NEW ISSUE	CP	06.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	14.04.01		

DART AEROSPACE LTD NAWKEURRY, ONTARIO, CANADA	
DRAWING NO.	D212-864-241
TITLE	CROSSTUBE ASSY (205/212 HI AFT)
SCALE	NTS
SHEET 1 OF 5	
REV. E	

1 2 3 4 5 6 7 8

13 14 15
D5018-1 SUPPORT
MS21920-28 CLAMP, 2X
D3586-063-530 RUBBER CUSHION, 2X
2 PL

13.75

D212-664-401
BENT TUBE

2.0
1.0

MASK AREA PRIOR TO PAINTING,
REMOVE MASKING AFTER PAINT
AND APPLY CLEAR COAT

2.0

G
SYM

D212-664-241B
ASSEMBLY DETAIL

13 14 15
MS21920-28
CLAMP, REF

13
APPLY PROSEAL
BETWEEN D5018-1 AND
CROSSTUBE

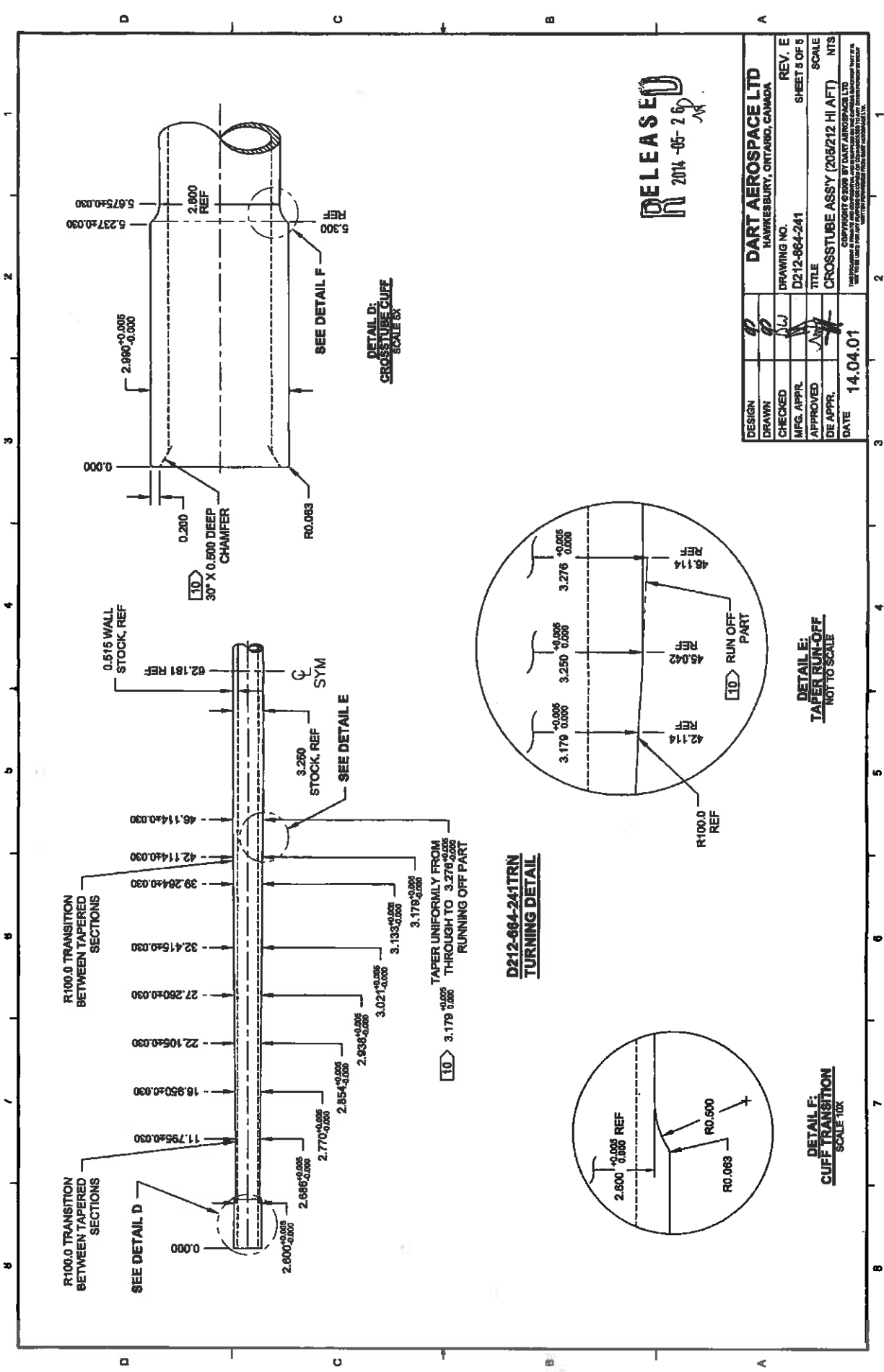
D5018-1
SUPPORT,
REF

D3586-063-530 RUBBER CUSHION
UNDER CLAMP, REF

SECTION G-G
SCALE 4X

RELEASED
2014-05-26
JMD

DESIGN	10	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	REV. E
DRAWN	10		
CHECKED	10	DRAWING NO. D212-664-241	SHEET 3 OF 5
MFG. APPR.	10	TITLE	SCALE
APPROVED	10	CROSSTUBE ASSY (205/212 HI AFT)	NTS
DE APPR.	10		
DATE	14.04.01		



Entered: _____ Date: _____

WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐



DISPOSITION		DEPARTMENT/PROCESS			
Job: _____	Rework ☐ Scrap ☐ Use-as-is ☐	Skid-tube ☐ Machining ☐ Large Fab ☐	Cross tube ☐ Small Fab ☐ Finishing ☐	Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐	Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐
Date: _____	Sequence #: _____	QTY Affected: _____		MRB (QS1042)	
Description Work Order Deviation		Disposition			
Root Cause		FAULT CATEGORY			
Operator ☐	Pressure/Forced ☐	Contamination ☐	Power Loss/Surge ☐	Positioned Wrong ☐	
Manufacturing Process ☐	Bending ☐	Misaligned/off center ☐	Folio/Program ☐	Outside Tolerance ☐	
Equip/Tooling ☐	Crushing ☐	BOM/Route ☐	Grain Direction ☐	Drawing ☐	
Handling/Preservation ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Finish ☐	
Material ☐	Crimp/Kink/Ripple/Wave/Twist ☐	Incomplete/Unclear Instructions ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	
Product Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Out of Sequence ☐	Misread ☐	
Process Improvement ☐	Mislabeled ☐	Fit/Function ☐	Off-set/Set-up ☐		
Human Factors ☐	Other/Details: _____				
Completed By		Lead hand / Supervisor			
QC / QA Coordinator					



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

POHB044352



Supplier: SKY002-VC
Skyservice
6120 Midfield Road
Mississauga
ON
L5P 1B1 Canada
Phone: 905-678-5636
Fax: 905-678-5841

Attention: Jenne, Heather

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

PO No: POHB044352

PO Date: 8/26/19

Due Date: 8/28/19

**Purchase Order
Revision:**

Revision Date:

Ship-To Contact: Guerin, Kimberley
Phone: 613-632-5200 Ext: 298
kguerin@dartaero.com

Via: Ground

Pymt Terms: Net 30

Freight Terms:

Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	198971	D212- 664-201	Aft Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA-316/2015 15/06/17 ***WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE.*** Issue P/O: LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
	198972	1	X AUG 28 2019	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
	198974	1	X AUG 28 2019	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
	198976	1	X AUG 28 2019	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
	198979	1	X AUG 28 2019	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
Sub Total:							5	0	5		\$703.57

DAS
68
9-8

AUG 28 2019



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

POHB044352



Items											
Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
2	199335	D212-664-101B	Fwd Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA-316/2015 15/06/17 (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
3	199277	D212-664-201B	Aft Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA-316/2015 15/06/17 (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
Grand Total:										\$985.00	

Order Notes

Procurement Quality Clauses
A005 right of entry
A012 chemical and physical test report
A016 personnel qualification
A017 raw material identification (as applicable)

A022 Apical Processing
A024 process certifications
A026 certification of material conformance

A041 quality management system
A042 dart notification by supplier
A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 8/28/19 2:38 PM Dart.Guerin.Kimberley



skyservice Work Order Traveler

Sky Service F.B.O. Inc.

10105 Ryan Avenue, Dorval, Quebec, H9P 1A2

TCCA AMO 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO41555	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: POHB044352 ✓
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT ON:

- ✓ 5 AFT CROSSTUBES, P/N: D212-664-201, J/S: 198971, 198972, 198974, 198976, 198979
- ✓ 1 AFT CROSSTUBE, P/N: D212-664-201B, J/S: 199277
- ✓ 1 FWD CROSSTUBE, P/N D212-664-101B, J/S: 199335

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417M-16						AUG 28 2019	 DOT-APP 20 53-89
NO CRACK FOUND							
PEN. ZL-56, MPO13600, CLEANER SKC-S MPO13923, DEV. MPO11715, UV LIGHT M-20142							
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

In house

RECEIVED

AUG 28 2019

DART AEROSPACE LTD.

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature: 	ACA/SCA Stamp DOT-APP 20 53-89	Date: AUG 28 2019
Name: RAFIK MELIKIAN		

5.0 PARTS LIST

5.1 HIGH GEAR CROSSTUBES

Item	QTY -101	QTY -201	QTY -203	Part Number	Description
	X			D212-664-101	CROSSTUBE INSTALLATION, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
		X		D212-664-201	CROSSTUBE INSTALLATION, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
			X	D412-664-203	CROSSTUBE INSTALLATION, 412 HIGH AFT
1	1			D212-664-141	CROSSTUBE ASSEMBLY, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
2		1		D212-664-241	CROSSTUBE ASSEMBLY, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
3			1	D412-664-243	CROSSTUBE ASSEMBLY, 412 HIGH AFT
10	2			* D2893-1	SUPPORT
11	4			* D3595-063-450	RUBBER CUSHION
12	4			* MS21920-25	CLAMP (OR MS21920-26)
13	4			AN6-35A	BOLT
14	4			AN6-36A	BOLT
15	6			MS21042L6	NUT (OR MS21042-6)
16	18			AN960JD616	WASHER
20		2		* D2940-1	SUPPORT
21		4		* D3595-063-530	RUBBER CUSHION
22		4		* MS21920-28	CLAMP (OR MS21920-30)
23		4		AN6-40A	BOLT
24		2		AN6-41A	BOLT
25		6		MS21042L6	NUT (OR MS21042-6)
26		18		AN960JD616	WASHER
30			1	* D2896-1	SUPPORT
32			2	* D3595-063-570	RUBBER CUSHION
33			4	* MS21920-28	CLAMP
34			2	* MS21920-30	CLAMP (OR MS21920-32)
35			4	AN6-40A	BOLT
36			2	AN6-41A	BOLT
37			6	MS21042L6	NUT (OR MS21042-6)
38			18	AN960JD616	WASHER
39			2	* D3189-1	CHAFING SHIELD
50	1	1		D3428-1	PLACARD

* REFERENCE ONLY. PARTS ARE INCLUDED IN D212-664-141/-241 OR D412-664-243 ASSEMBLIES ABOVE.

NOTE: KITS INCLUDE EXTRA HARDWARE FOR COMPATIBILITY WITH BOTH DART AND BELL/AAI SKIDTUBES.

Change Record

PAGE 1 OF 1

Part Number: D212-664-201/-201MB

Description: CROSSTUBE INSTALLATION, HIGH AFT

[illegible]